

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Landry W., Donald
- (ii) TITLE OF INVENTION: ANTI-COCAINE CATALYTIC ANTIBODY
- (iii) NUMBER OF SEQUENCES: 90
- (iv) CORRESPONDENCE ADDRESS:
 (A) ADDRESSEE: Cooper and Dunham LLP
 (B) STREET: 1185 Avenue of the Americas
 (C) CITY: New York
 (D) STATE: New York
 (E) COUNTRY: USA
 (F) ZIP: 10036
- (v) COMPUTER READABLE FORM:
 (A) MEDIUM TYPE: Floppy disk
 (B) COMPUTER: IBM PC compatible
 (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
 (A) APPLICATION NUMBER: US
 (B) FILING DATE: 24-JUN-1997
 (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
 (A) NAME: White, John P.
 (B) REGISTRATION NUMBER: 28,678
 (C) REFERENCE/DOCKET NUMBER: 0575/51400-A-PCT
- (ix) TELECOMMUNICATION INFORMATION:
 (A) TELEPHONE: 212-278-0400
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(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 109 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
- | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Val | Val | Thr | Gln | Glu | Ser | Ala | Leu | Thr | Thr | Trp | Pro | Gly | Glu | Thr |
| 1 | | | | | | | | | 5 | | | 10 | | 15 | |
| Val | Thr | Leu | Thr | Cys | Arg | Ser | Ser | Thr | Gly | Thr | Ile | Thr | Thr | Ser | Asn |
| | | | | | | | | | | | | | | | |
| Tyr | Ala | Asn | Trp | Val | Gln | Glu | Lys | Pro | Asp | His | Leu | Phe | Ser | Gly | Leu |
| | | | | | | | | | | | | | | | |
| Ile | Gly | Ile | Asn | Asn | Asn | Arg | Pro | Pro | Gly | Val | Pro | Ala | Arg | Phe | Ser |
| | | | | | | | | | | | | | | | |
| Gly | Ser | Leu | Ile | Gly | Asp | Lys | Ala | Val | Leu | Thr | Ile | Thr | Gly | Ala | Gln |
| 65 | | | | | | | | | | | | | | | |

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Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Tyr Ser Asn His
85 90 95

Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 109 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Arg Pro Gly Glu Thr
1 5 10 15

Val Thr Leu Thr Cys Arg Ser Ser Ala Gly Thr Ile Thr Thr Ser Asn
20 25 30

Tyr Ala Asn Trp Val Gln Glu Lys Pro Asp His Leu Phe Ser Gly Leu
35 40 45

Ile Gly Val Asn Asn Asn Arg Pro Pro Gly Val Pro Ala Arg Phe Ser
50 55 60

Gly Ser Leu Ile Gly Asp Thr Ala Ala Leu Thr Ile Thr Gly Ala Gln
65 70 75 80

Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Tyr Ser Asn His
85 90 95

Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 109 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Ser Pro Gly Glu Thr
1 5 10 15

Val Thr Leu Thr Cys Arg Ser Ser Thr Gly Thr Ile Thr Ser Asp Asn
20 25 30

Tyr Ala Asn Trp Val Gln Glu Lys Pro Asp His Leu Phe Ser Gly Leu
35 40 45

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Ile Gly Val Asn Asn Tyr Arg Pro Pro Gly Val Pro Ala Arg Phe Ser
 50 55 60
 Gly Ser Leu Thr Gly Asp Lys Ala Val Leu Thr Ile Thr Gly Ala Gln
 65 70 75 80
 Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Tyr Ser Asn His
 85 90 95
 Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
 100 105

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 109 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Ala Val Val Thr Gln Glu Ser Ala Leu Thr Arg Ala Pro Gly Glu Thr
 1 5 10 15
 Val Thr Leu Thr Cys Arg Ser Ser Ser Gly Thr Ile Thr Ala Asn Asn
 20 25 30
 Tyr Gly Ser Trp Val Gln Glu Lys Pro Asp His Leu Phe Thr Gly Leu
 35 40 45
 Ile Gly Val Ser Asn Asn Arg Gly Pro Gly Val Pro Ala Arg Phe Ser
 50 55 60
 Gly Ser Leu Ile Gly Asp Lys Ala Val Leu Thr Ile Thr Gly Gly Gln
 65 70 75 80
 Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Asn Ser Asn His
 85 90 95
 Phe Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
 100 105

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 113 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Asp Ile Val Met Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly

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1 5 10 15
 Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Arg Ser Leu Leu Tyr Arg
 20 25 30
 Asp Gly Lys Thr Tyr Leu Asn Trp Phe Leu Gln Arg Pro Gly Arg Ser
 35 40 45
 Pro Gln Leu Leu Ile Tyr Leu Met Ser Thr Arg Ser Ser Gly Val Ser
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile
 65 70 75 80
 Ser Arg Val Lys Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln His Phe
 85 90 95
 Val Asp Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105 110
 Arg

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 113 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Asp Met Val Met Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly
 1 5 10 15
 Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Arg Ser Leu Leu Tyr Arg
 20 25 30
 Asp Gly Lys Thr Tyr Leu Asn Trp Phe Leu Gln Arg Pro Gly Arg Ser
 35 40 45
 Pro Gln Leu Leu Ile Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Ser
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile
 65 70 75 80
 Ser Arg Val Lys Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln His Phe
 85 90 95
 Glu Asp Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105 110
 Arg

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 113 amino acids
 - (B) TYPE: amino acid

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- (C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

```

Asp Met Val Met Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly
1           5           10           15
Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Arg Ser Leu Leu Tyr Arg
          20           25           30
Asp Gly Lys Thr Tyr Leu Asn Trp Phe Leu Gln Arg Pro Gly Arg Ser
          35           40           45
Pro Gln Leu Leu Ile Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Ser
          50           55           60
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile
65           70           75           80
Ser Arg Val Lys Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln His Phe
          85           90           95
Val Asp Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
          100          105          110
Arg

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(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 113 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

```

Asp Ile Val Ile Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly
1           5           10           15
Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu Tyr Glu
          20           25           30
Asp Gly Lys Thr Tyr Leu Asn Trp Phe Leu Gln Arg Pro Gly Gln Ser
          35           40           45
Pro His Leu Leu Ile Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Ser
          50           55           60

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Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile
65 70 75 80

Ser Arg Val Lys Ala Glu Asp Val Gly Ala Tyr Tyr Cys Gln Gln Phe
85 90 95

Val Glu Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Arg
100 105 110

Arg

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 114 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Glu Leu Val Met Thr Gln Ser Pro Leu Thr Leu Ser Val Thr Ile Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu Tyr Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Asn Trp Phe Phe Gln Arg Pro Gly Gln Ser
35 40 45

Pro Lys Arg Leu Ile Tyr Leu Val Ser Lys Leu Asp Ser Gly Val Pro
50 55 60

Asp Arg Phe Thr Gly Ser Gly Ser Gly Lys Asp Phe Thr Leu Lys Glu
65 70 75 80

Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Leu Tyr Tyr Cys Val Gln
85 90 95

Gly Tyr Thr Phe Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys Arg

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 117 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

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Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1          5          10          15
Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Asn Ser Ile Thr Ser Asp
          20          25          30
Tyr Ala Trp Thr Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu Glu Trp
          35          40          45
Met Gly Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu
          50          55          60
Ile Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Phe Phe
65          70          75          80
Leu Gln Leu Asp Ser Val Thr Ala Glu Asp Thr Ala Thr Tyr Tyr Cys
          85          90          95
Val Arg Tyr His Tyr Tyr Gly Ser Ala Tyr Trp Gly Gln Gly Thr Leu
          100          105          110
Val Thr Val Ser Ala
          115

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(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 117 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

```

Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1          5          10          15
Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Asn Ser Ile Thr Ser Asp
          20          25          30
Tyr Ala Trp Thr Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu Glu Trp
          35          40          45
Met Gly Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu
          50          55          60
Ile Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Phe Phe
65          70          75          80
Leu Gln Leu Asp Ser Val Thr Ala Glu Asp Thr Ala Thr Tyr Tyr Cys
          85          90          95
Val Arg Tyr His Tyr Tyr Gly Ser Ala Tyr Trp Gly Gln Gly Thr Leu
          100          105          110
Val Thr Val Ser Ala

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(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 117 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

```

Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1             5             10             15
Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Asn Ser Ile Thr Ser Asp
                20             25             30
Tyr Ala Trp Thr Trp Ile Arg Lys Phe Pro Gly Asn Lys Leu Glu Trp
                35             40             45
Leu Gly Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu
                50             55             60
Ile Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Phe Phe
65             70             75             80
Leu Gln Leu Asp Ser Val Thr Ala Glu Asp Thr Ala Thr Tyr Tyr Cys
                85             90             95
Val Arg Tyr His Tyr Tyr Gly Ser Ala Tyr Trp Gly Gln Gly Thr Leu
                100            105            110
Val Thr Val Ser Ala
                115

```

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 117 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

```

Asp Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Val Lys Pro Ser Gln
1             5             10             15
Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr Ser Asp
                20             25             30
Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Arg Leu Glu Trp
                35             40             45
Met Gly Tyr Ile Arg Tyr Ser Gly Ile Thr Arg Tyr Asn Pro Ser Leu

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50		55		60
Lys 65	Ser Arg Ile Ser 70	Ile Thr Arg Asp Thr 75	Ser Lys Asn Lys Phe Phe 80	
Leu	Gln Leu Asn Ser 85	Val Thr Thr Glu Asp Thr 90	Ala Thr Tyr Tyr Cys 95	
Val	Arg Ile His 100	Tyr Tyr Gly Tyr Gly 105	Asn Trp Gly Gln Gly 110	Thr Thr
Leu Thr Gly Leu Pro 115				

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 116 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Asp 1	Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Val Lys Pro Gly Ala 15
Ser 20	Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Pro Phe Thr Asp Tyr 30
Asn 35	Met Tyr Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile 45
Gly 50	Tyr Ile Asp Pro Ser Asn Gly Gly Ile Phe Tyr Asn Gln Lys Phe 60
Lys 65	Gly Arg Ala Thr Leu Thr Val Asp Lys Ser Ser Asn Thr Ala Phe 80
Met 85	His Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys 95
Ala 100	Arg Gly Gly Gly Leu Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val 110
Thr 115	Val Ser Glu

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 116 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Glu Ile His Leu Gln Glu Ser Gly Glu Leu Val Lys Pro Gly Ala Ser
 1 5 10 15
 Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Ser Asp Tyr
 20 25 30
 Asn Met Tyr Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
 35 40 45
 Gly Tyr Ile Asp Pro His Asn Gly Gly Ile Phe Tyr Asn Gln Lys Phe
 50 55 60
 Lys Gly Arg Ala Thr Leu Thr Val Asp Lys Ser Ser Asn Thr Ala Phe
 65 70 75 80
 Met His Leu Asn Val Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Gly Gly Gly Leu Phe Ala Tyr Trp Gly Arg Gly Thr Leu Val
 100 105 110
 Thr Val Ser Ala
 115

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 115 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Glu Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Asp Tyr Asn
 20 25 30
 Met Tyr Trp Val Lys Gln Asn His Gly Glu Ser Leu Glu Trp Ile Ala
 35 40 45
 Tyr Ile Asp Pro Ser Asn Gly Asp Thr Arg Tyr Asn Gln Lys Phe Gln
 50 55 60
 Gly Lys Ala Thr Val Thr Leu Asp Lys Ser Ser Ser Thr Ala Phe Met
 65 70 75 80
 His Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala
 85 90 95
 Arg Gly Gly Gly Leu Phe Ala Phe Trp Gly Gln Gly Thr Leu Val Thr

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100

105

110

Val Ser Ala
115

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 116 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Val Gln Leu Leu Glu Ser Gly Ala Glu Leu Val Met Pro Gly Ala Ser
1 5 10 15
Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp His Trp
20 25 30
Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly
35 40 45
Thr Ile Asp Leu Ser Asp Thr Tyr Thr Gly Tyr Asn Gln Asn Phe Lys
50 55 60
Gly Arg Ala Thr Leu Thr Leu Asp Glu Ser Ser Asn Thr Ala Tyr Met
65 70 75 80
Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ser
85 90 95
Arg Arg Gly Tyr Tyr Gly Phe Asp Tyr Trp Gly Gln Gly Thr Thr Leu
100 105 110
Thr Val Ser Ser
115

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 115 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Val Gln Leu Leu Glu Ser Gly Ala Glu Leu Val Lys Pro Gly Ala Ser

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1	5	10	15
Val Glu Leu Ser Cys Arg Thr Ser Gly Tyr Thr Phe Thr Thr Tyr Tyr	20	25	30
Ile Tyr Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly	35	40	45
Gly Met Asn Pro Gly Asn Gly Val Thr Tyr Phe Asn Glu Lys Phe Lys	50	55	60
Asn Arg Ala Thr Leu Thr Val Asp Arg Ser Ser Ser Ile Ala Tyr Met	65	70	75
Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Thr	85	90	95
Arg Val Gly Asn Leu Phe Ala Tyr Trp Gly Arg Gly Thr Leu Val Thr	100	105	110
Val Ser Ala	115		

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 16 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Arg Ser Ser Arg Ser Leu Leu Tyr Arg Asp Gly Lys Thr Tyr Leu Asn	1	5	10	15
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(2) INFORMATION FOR SEQ ID NO:20:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 7 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leu Met Ser Thr Arg Ser Ser	1	5
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(2) INFORMATION FOR SEQ ID NO:21:

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- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 9 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Gln His Phe Val Asp Tyr Pro Phe Thr
1 5

(2) INFORMATION FOR SEQ ID NO:22:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Arg Ser Ser Lys Ser Leu Leu Tyr Glu Asp Gly Lys Thr Tyr Leu Asn
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 7 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Leu Met Ser Thr Arg Ala Ser
1 5

(2) INFORMATION FOR SEQ ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 9 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Gln His Phe Glu Asp Tyr Pro Phe Thr
1 5

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Arg Ser Ser Lys Ser Leu Tyr Glu Asp Gly Lys Thr Tyr Leu Asn
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Leu Met Ser Thr Arg Ala Ser
1 5

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Gln Gln Phe Val Glu Tyr Pro Phe Thr
1 5

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Arg Ser Ser Arg Ser Leu Leu Tyr Arg Asp Gly Lys Thr Tyr Leu Asn
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Leu Met Ser Thr Arg Ala Ser
1 5

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Gln His Phe Glu Asp Tyr Pro Phe Thr
1 5

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

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Arg Ser Ser Thr Gly Thr Ile Thr Thr Ser Asn Tyr Ala Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ile Asn Asn Asn Arg Pro Pro
1 5

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Ala Leu Trp Tyr Ser Asn His Trp Val
1 5

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Arg Ser Ser Ala Gly Thr Ile Thr Thr Ser Asn Tyr Ala Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Val Asn Asn Asn Arg Pro Pro
1 5

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Ala Leu Trp Tyr Ser Asn His Trp Val
1 5

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Arg Ser Ser Thr Gly Thr Ile Thr Ser Asp Asn Tyr Ala Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:48:

- (I) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Val Asn Asn Tyr Arg Pro Pro
1 5

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single

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(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Ala Leu Trp Tyr Ser Asn His Trp Val
1 5

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Arg Ser Ser Ser Gly Thr Ile Thr Ala Asn Asn Tyr Gly Ser
1 5 10

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Val Ser Asn Asn Arg Gly Pro
1 5

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Ala Leu Trp Asn Ser Asn His Phe Val
1 5

(2) INFORMATION FOR SEQ ID NO:43:

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- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Lys Ser Ser Gln Ser Leu Leu Tyr Ser Asp Gly Lys Thr Tyr Leu Asn
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 7 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Leu Val Ser Lys Leu Asp Ser
1 5

(2) INFORMATION FOR SEQ ID NO:45:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 9 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Val Gln Gly Tyr Thr Phe Pro Leu Thr
1 5

(2) INFORMATION FOR SEQ ID NO:46:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 6 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

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Ser Asp Tyr Ala Trp Thr
1 5

(2) INFORMATION FOR SEQ ID NO:47:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu Ile Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:48:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Tyr His Tyr Tyr Gly Ser Ala Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Ser Asp Tyr Ala Trp Thr
1 5

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu Ile Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Tyr His Tyr Tyr Gly Ser Ala Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Ser Asp Tyr Ala Trp Asn
1 5

(2) INFORMATION FOR SEQ ID NO:53:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Tyr Ile Arg Tyr Ser Gly Ile Thr Arg Tyr Asn Glu Ser Leu Lys Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:54:

- (i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Ile His Tyr Tyr Gly Tyr Gly Asn
1 5

(2) INFORMATION FOR SEQ ID NO:55:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 6 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Ser Asp Tyr Ala Trp Thr
1 5

(2) INFORMATION FOR SEQ ID NO:55:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 16 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Tyr Ile Arg His Ile Tyr Gly Thr Arg Tyr Asn Pro Ser Leu Ile Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:57:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 8 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Tyr His Tyr Tyr Gly Ser Ala Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:58:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Asp Tyr Asn Met Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:59:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Tyr Ile Asp Pro Ser Asn Gly Gly Ile Phe Tyr Asn Gln Lys Phe Lys
1 5 10 15
Gly

(2) INFORMATION FOR SEQ ID NO:60:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Gly Gly Gly Leu Phe Ala Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:61:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids

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- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Asp Tyr Asn Met Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:62:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 17 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Tyr Ile Asp Pro His Asn Gly Gly Ile Phe Tyr Asn Gln Lys Phe Lys
1 5 10 15
Gly

(2) INFORMATION FOR SEQ ID NO:63:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 7 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Gly Gly Gly Leu Phe Ala Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:64:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 5 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

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Asp Tyr Asn Met Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:65:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Tyr Ile Asp Pro Ser Asn Gly Asp Thr Phe Tyr Asn Gln Lys Phe Gln
1 5 10 15
Gly

(2) INFORMATION FOR SEQ ID NO:66:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Gly Gly Gly Leu Phe Ala Phe
1 5

(2) INFORMATION FOR SEQ ID NO:67:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Thr Tyr Tyr Ile Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:68:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Gly	Met	Asn	Pro	Gly	Asn	Gly	Val	Thr	Tyr	Phe	Asn	Glu	Lys	Phe	Lys
1				5					10					15	

Met

(2) INFORMATION FOR SEQ ID NO:69:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Val	Gly	Asn	Leu	Phe	Ala	Tyr
1				5		

(2) INFORMATION FOR SEQ ID NO:70:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Asp	His	Trp	Met	His
1			5	

(2) INFORMATION FOR SEQ ID NO:71:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Thr	Ile	Asp	Leu	Ser	Asp	Thr	Tyr	Thr	Gly	Tyr	Asn	Gln	Asn	Phe	Lys
1				5					10					15	

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Gly

(2) INFORMATION FOR SEQ ID NO:72:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 5 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Arg Gly Phe Asp Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:73:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 14 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Arg Ser Ser Xaa Gly Thr Ile Thr Xaa Xaa Asn Tyr Ala Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:74:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 7 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

Xaa Asn Asn Tyr Arg Pro Pro
1 5

(2) INFORMATION FOR SEQ ID NO:75:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:

Ala Leu Trp Tyr Ser Asn His Trp Val
1 5

(2) INFORMATION FOR SEQ ID NO:76:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

Asp Tyr Asn Met Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:77:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Tyr Ile Asp Pro Xaa Asn Gly Xaa Xaa Phe Tyr Asn Gln Lys Phe Xaa
1 5 10 15

Gly

(2) INFORMATION FOR SEQ ID NO:78:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Gly Gly Gly Leu Phe Ala Xaa

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5

(2) INFORMATION FOR SEQ ID NO:79:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Arg Ser Ser Xaa Ser Leu Leu Tyr Xaa Asp Gly Lys Thr Tyr Leu Asn
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:80:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Leu Met Ser Thr Arg Xaa Ser
1 5

(2) INFORMATION FOR SEQ ID NO:81:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Gln Xaa Phe Xaa Xaa Tyr Pro Phe Thr
1 5

(2) INFORMATION FOR SEQ ID NO:82:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid

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- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Ser Asp Tyr Ala Trp Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:83:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 16 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Tyr Ile Arg Xaa Xaa Xaa Xaa Thr Arg Tyr Asn Pro Ser Leu Xaa Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:84:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Xaa His Tyr Tyr Gly Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:85:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 330 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

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TCTGGACCTG AGCTGGTGAA GCCTGGGGCT TCAGTGAAGG TATCCTGTAA GGCTTCTGGT 60
 TATTCATTCA CTGACTACAA TATGTACTGG GTGAAGCAGA ACCATGGAGA GAGCCTTGAA 120
 TGGATTGCAT ATATTGATCC TTCCAATGGT GATACTTTCT ACAACCAGAA ATTCCAGGGC 180
 AAGGCCACAG TGACTCTTGA CAAGTCCTCC AGTACAGCCT TCATGCATCT CAACAGCCTG 240
 ACATCTGAGG ACTCTGCAGT CTATTACTGT GCAAGAGGGG GGGGCCTGTT TGCTTTCTGG 300
 GGGCAAGGGA CTCTGGTCAC TGTCTCTGCA 330

(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 368 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

GATATGGTGA TGACGCAAGA CGAACTCTCC AATCCTGTCA CTTCTGGAGA ATCAGTTTCC 60
 ATCTCCTGCA GGTCTAGTAA GAGTCTCCTA TATGAGGATG GGAAGACATA CTTGAATTGG 120
 TTTCTGCAGA GACCAGGACA ATCTCCTCAC CTCCTGATCT ATTTGATGTC CACCCGTGCA 180
 TCAGGAGTCT CAGACCGGTT TAGTGGCAGT GGGTCAGGAA CAGATTTTCA CCTGGAAATC 240
 AGTAGAGTGA AGGCTGAGGA TGTGGGTGCG TATTACTGTC AACAAATTTGT AGAGTATCCA 300
 TTCACGTTTC GCTCGGGGAC AAAGTTGGAA ATAAGACGGG TTGATGCCGC ACCAACTGTA 360
 TCCATCTT 368

(2) INFORMATION FOR SEQ ID NO:87:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 366 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

GATGTGCAGC TTCAGGAGTC GGGACCTGGC CTGGTGAAAC CTTCTCAGTC TCTGTCCCTC 60
 ACCTGCACTG TCACTGGCAA TTCAATCACC AGTGATTATG CCTGGACCTG GATCCGGCAG 120
 TTTCCAGGAA ACAAACTGGA GTGGATGGGC TACATAAGGC ACATTTATGG CACTAGGTAC 180
 AACCCTTCTC TCATAAGTCG AATCTCTATC ACTCGAGACA CGTCCAAGAA CCAGTTCTTC 240
 CTGCAGTTGG ATTCTGTGAC TGCTGAGGAC ACAGCCACAT ATTATTGTGT AAGATATCAT 300
 TACTACGGTT CGGCTTACTG GGGCCAAGGG ACTCTGGTCA CTGTCTCTGC AGCCAAAACG 360

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(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 339 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

GATATTGTGA TGACCCAGGA TGAACCTCTCC AATCCTGTCA CTTCTGGAGA ATCAGTTTCC 60
ATCTCCTGCA GGTCTAGTAG GAGTCTCCTA TATAGGGATG GGAAGACATA CTTGAATTGG 120
TTTCTGCAGA GACCAGGACG ATCTCCTCAA CTCCTGATCT ATTTGATGTC CACCCGTTCA 180
TCAGGAGTCT CAGACCGGTT TAGTGGCAGT GGGTCAGGAA CAGATTTTAC CCTGGAAATC 240
AGTAGAGTGA AGGCTGAGGA TGTGGGTGTG TATTACTGTC AACACTTTGT AGACTATCCA 300
TTCACGTTTCG GCTCGGGGAC AAAGTTGGAG ATAAACGG 339

(2) INFORMATION FOR SEQ ID NO:89:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 366 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

GACGTGCACTG TGCAGGAGTC GGGACCTGGC CTGGTGAAAC CTTCTCAGTC TCTGTCCCTC 60
ACCTGCACTG TCACTGGCAA TTCAATCACC AGTGATTATG CCTGGACCTG GATCCGGCAG 120
TTTCCAGGAA ACAAACTGGA GTGGATGGGC TACATAAGGC ACATTTATGG CACTAGGTAC 180
AACCCTTCTC TCATAAGTCG AATCTCTATC ACTCGAGACA CGTCCAAGAA CCAGTTCTTC 240
CTGCAGTTGG ATTCTGTGAC TGCTGAGGAC ACAGCCACAT ATTATTGTGT AAGATATCAT 300
TACTACGGTT CGGCTTACTG GGGCCAAGGG ACTCTGGTCA CTGTCTCTGC AGCCAAAACG 360
ACACCC 366

(2) INFORMATION FOR SEQ ID NO:90:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 368 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

T09230" 2204660

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

GATATGGTGA	TGACGCAAGA	TGAACTCTCC	AATCCTGTCA	CTTCTGGAGA	ATCAGTTTCC	60
ATCTCCTGCA	GGTCTAGTAG	GAGTCTCCTA	TATAGGGATG	GGAAGACATA	CTTGAATTGG	120
TTTCTGCAGA	GACCAGGACG	ATCTCCTCAA	CTCCTGATCT	ATTTGATGTC	CACCCGTGCA	180
TCAGGAGTCT	CAGACCGGTT	TAGTGGCAGT	GGGTCAGGAA	CAGATTTTCA	CCTGGAAATC	240
AGTAGAGTGA	AGGCTGAGGA	TGTGGGTGTG	TATTACTTTC	AACACTTTGA	AGACTATCCA	300
TTACGTTTCG	GCTCGGGGAC	AAAATTGGAG	ATAAAACGGG	CTGATGCTGC	ACCAACTGTA	360
TCCATCTT						368

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